

S.N. 10/697,191 Page 5

REMARKS

Claims 9-10 and 16-26 are pending in this application.

Claims 9-10 and 16-26 are rejected.

Claims 9-10 and 16-26 are rejected under 35 U.S.C. §102(e) as being anticipated by Anthony et al. U.S. Patent No. 6,404,674. Claim 9 is also objected to for an improper dependency. The '102 rejection of claims 9-10 and the objection to claim 9 are rendered moot by the cancellation of claims 9-10.

The '102 rejection of claims 16-26 is respectfully traversed (claim 16 has been amended for clarity, not in response to the '102 rejection). Claim 16 recites a data storage device comprising an array of magnetic memory cells. Each memory cell includes a data ferromagnetic layer and a reference ferromagnetic layer. The data storage device further includes a plurality of first traces extending in a first direction, and a plurality of structures extending in a second direction. Each first trace corresponds to a group of data layers. Each structure forms closed flux paths with a group of reference layers.

Anthony et al. disclose a data storage device including a conductor that is wholly clad by ferromagnetic material (see the Abstract). The clad conductor functions as a reference layer and a read/write line. See, for example, Figure 5, which illustrates a data layer 11, an intermediate layer 13 (e.g., an insulating tunnel barrier), a ferromagnetic cap 15, and a soft ferromagnetic reference layer 17. The soft ferromagnetic reference layer 17 includes a read-write conductor 19 and a ferromagnetic cladding 21 that completely surrounds the read-write conductor 19 to form a cladded read-write conductor. The read-write conductor

S.N. 10/697,191 Page 6

19 is wholly clad on all of its sides by the ferromagnetic cladding 21 (see col. 10, line 49 to col. 11, line 3). The cladding 21 forms a closed flux path. Anthony et al. do not disclose a reference ferromagnetic layer and a separate structure for closing the flux path of the reference layer.

The office action cites a passage at col. 8, lines 47-67. However, this passage describes a read-write conductor that is fully clad by a ferromagnetic material (see lines 55-57). The office action also cites Figs. 8b, 9a-9b. However, these figures clearly show that the cladding 21 provides a closed flux path. An additional structure is not needed to close the flux path.

Thus Anthony et al. does not disclose each limitation of claim 16. Therefore, the '102 rejection of claim 16 and its dependent claims 17-26 should be withdrawn.

Anthony et al. cannot be used in a '103 rejection since it is a '102(e) reference that is assigned to the assignee of the present application. Therefore, claim 16 and its dependent claims 17-26 should be allowed over Anthony et al.

Claims 19-21 and 26 recite reading a logic value by examining the change in resistance states of a selected memory cell. This approach is self-referencing and, therefore, does not require comparison to a reference value.

Anthony et al. do not teach or suggest such an approach. Col. 1, lines 66-67 and col. 9, lines 12-17 of Anthony disclose reading a logic value by making a single measurement of the resistance state of a selected memory cell. The measurement can be compared to a reference value. For this additional reason, claims 19-21 and 26 should be allowed over Anthony et al.

S.N. 10/697,191 Page 7

Claims 27-29 have been added to the application. These new claims should be allowed over Anthony et al. since they depend from claim 16. They, along with claims 23-25, should be allowed for the additional reason that Anthony et al. do not disclose a conductor that is partially clad. According to Anthony et al., the conductor 19 is fully clad.

The examiner is respectfully requested to allow the claims. If any issues remain, the examiner is invited to contact the undersigned to discuss those remaining issues.